

Claims

1. A method for selecting the power of an intraocular lens, comprising
extracting the native lens;
performing autorefraction on the aphakic eye to provide one or more aphakic
5 refraction measurements;
determining the power of the intraocular lens from the one or more aphakic
refraction measurements.

2. The method of claim 1 wherein the autorefraction is performed with the patient
10 in the same position in which the native lens was extracted.

3. The method of claim 2 wherein the position of the patient is the supine
position.

15 4. The method of claim 1 wherein the method is used for patients that have
previously undergone vision correcting refractive surgery.

5. The method of claim 1 wherein the determining the power of the intraocular
lens comprises using a predictive model that is an empirically derived relationship
20 between the autorefraction measurements and the power of the intraocular lens.

6. The method of claim 1 wherein the determining the power of the intraocular
lens comprises using a predictive model that is a theoretically derived relationship
between the autorefraction measurements and the power of the intraocular lens.
25

7. The method of claim 1 wherein the native lens is extracted using a surgical
microscope and the autorefraction is performed using an autorefraction device configured
to be moved into place for making autorefraction measurements following extraction of
the native lens using the surgical microscope.
30

8. The method of claim 1 wherein the autorefraction comprises making a plurality of autorefraction measurements and averaging the measurements.

9. The method of claim 1 wherein determining the power of the intraocular lens
5 comprises determining the power from the one or more autorefractive measurements and from other parameters.

10. The method of claim 9 wherein the other parameters include preoperative anatomic measurements of the eye.

10

11. The method of claim 9 wherein the other parameters include one or more of the following: intraocular pressure, intraoperative axial length, intraoperative keratometry, preoperative keratometry, preoperative axial length, intraoperative anterior chamber depth, or preoperative anterior chamber depth.

15

12. Apparatus for performing intraocular implant surgery, comprising surgical apparatus for performing intraocular implant surgery;
an autorefraction device associated with the surgical apparatus, wherein the autorefraction device is configured to perform autorefraction on the aphakic eye to
20 provide one or more aphakic refraction measurements;
a processor connected to the autorefraction device, wherein the processor is configured to process the aphakic refraction measurements and provide the user of the apparatus with information regarding the power of the intraocular lens.

25

13. The apparatus of claim 12 further comprising a display for providing the user of the apparatus with the information regarding the power of the intraocular lens.

14. The apparatus of claim 13 wherein the autorefraction device is attached to or integrated with the surgical apparatus.

30

15. The apparatus of claim 14 wherein the surgical apparatus is a surgical microscope and the autorefraction device comprises an autorefraction device configured to be moved into place for making refraction measurements following extraction of the native lens using the surgical microscope.

5

16. The apparatus of claim 13 wherein the autorefraction device is a portable autorefraction device that is used while a patient is in the supine position following surgical extraction of the lens.

10

17. The apparatus of claim 13 wherein the autorefraction device comprises a retinoscope.

18. The apparatus of claim 13 wherein the autorefraction device comprises a wavefront-based autorefraction device.

15

19. The apparatus of claim 13 wherein the autorefraction device comprises apparatus for measuring the aphakic dioptric state, the deficiency of the ocular system, or both the aphakic dioptric state and the deficiency of the ocular system.

20

20. The apparatus of claim 13 wherein the autorefraction device comprises or works in combination with an external lens, contact lens, intraocular lens, or other component with refractive or medium properties positioned along the optical axis along an autorefraction measurement trajectory.

25

21. The apparatus of claim 13 wherein the surgical apparatus comprises a surgical microscope that includes an ocular piece or display for centration and positioning and a toggle for XYZ movement, and wherein the autorefraction device is positioned and configured so that movement of the toggle can adjust the position of the autorefraction device relative to the eye.

30